Site: Rice	**Overall Confidence Rating: medium**

Background: For 1994-1996, about 3 million acres of rice were harvested in the United States per year. AR, CA, LA, MS, and TX comprise 97% of the acreage[3] . About one third of the rice crop was treated with insecticides annually[4]. Organophosphates are used on about 15% of total rice acres and account for nearly one-half of the insecticides applied to rice.

Organophosphate	% Treated		# Applications		Rate (lb AI/A)		PHI (days)	
Pesticides	Max	Avg	Max	Avg	Max	Avg	Min	Avg
Malathion	4.2[1]	1.6[1]	---	1.1[1]	2[2]	1[1]	5[2]	7[2]
Methyl-parathion	8[1]	---	---	---	0.8[2]	---	1[2]	15[2]
Chlorpyrifos	<1[1]	<1[1]	---	1[1]	---	1[1]	---	---

Confidence Rating: H= high confidence = data from several confirming sources; confirmed by personal experience
M = medium confidence = data from only a few sources; may be some conflicting or unconfirmed info.
L = low confidence = data from only one unconfirmed source

Organophosphate Target Pests for Rice in the Mid-South (Primary pests controlled by the OP's)	
Major	Rice Stinkbug, and Grasshoppers
Moderate	none
Minor	Armyworm and Fall Armyworm

Major = 20+% of all OP usage on pest; Moderate = 5-20% of all OP usage on pest; Minor =<5% of all OP usage on pest

Organophosphate Target Pests for Rice in California (Primary pests controlled by the OP's)	
Major	Tadpole shrimp
Moderate	none
Minor	Rice leafminer, Armyworm, and Rice Stinkbug

Major = 20+% of all OP usage on pest; Moderate = 5-20% of all OP usage on pest; Minor =<5% of all OP usage on pest

Sources:

[1] EPA's Quantitative Use Analysis: chlorpyrifos (1987-1993), methyl-parathion (1996) and malathion (data from years not stated).
[2] EPA's Label Use Information System - 1998 Summary Report.
[3] National Agricultural Statistical Service, Grain and Feed 1998.
[4] US EPA proprietary data sources

Date: September 1998

Site: Rice
Region: Mid-South (MS, LA, TX, and AR)

Pest [1,2,3,7,8]	Organophosphate	Efficacy	Mkt[1]	Class	Alt. Pesticide List	Efficacy	Mkt[1]	Constraints of Alternatives
Timing: postemergence								
Rice Stinkbug (major)	malathion	❍[5]	low	C	carbaryl	---	med	Carbaryl is two to three times more expensive[1], and is slower acting than the organophosphates used for this pest[6]. Lambda-cyhalothrin was registered in 1997 to control this pest on rice. It is very effective but also toxic to aquatic organisms so it must be used early in the season before crawfish are active in rice fields also used for crawfish production[6].
	methyl-parathion	---	high	P	lambda-cyhalothrin	☺ [6]	new	
Grasshoppers (major)	malathion	---	high	C	carbaryl	---	med	Although rice is rarely treated for grasshopper infestation, when it is necessary to treat, OPs are frequently selected. Carbaryl should not be applied within 15 days of propanil herbicide or plant injury may occur.
	methyl-parathion	---	high					
Armyworm, and Fall armyworm (minor)	malathion	---	med	P	lambda-cyhalothrin	☺ [6]	low	Control with *B. thuringiensis* was reported as poor[3]. If mature larvae are present, a contact insecticide should be added to enhance control with *B. thuringiensis*[3]. Cultural control (flooding) is often effective for control[4]. Applying propanil within 15 days of a carbaryl application or within 14 days of a methyl parathion application, as is often contemplated for armyworm control, can cause foliar burn[3]. Lambda-cyhalothrin is toxic to aquatic organisms so it must be used early in the season before crawfish are active in rice fields also used for crawfish production[6].
	methyl-parathion	---	high	B	*Bacillus thuringiensis*[2,3]	● [3]	low[2,3]	

Pest Importance: Major = 20+% of all OP usage on pest; Moderate = 5-20% of all OP usage on pest; Minor = <5% of all OP usage on pest
Efficacy Rating: Excellent = ☺ Good = ❍ Fair = ●
Market Share: High = use of OP represents 20+% of all insecticide usage on pest; Med = 5-20% of all usage on pest; Lo = <5% of all usage on pest
Insecticides: C = Carbamates; P = Pyrethroids; CH = Chlorinated Hydrocarbons; IGR = Insect Growth Regulators; B = Biological; O = Other pesticides

Site: Rice
Region: Mid-South (MS, LA, TX, and AR)

ADDITIONAL INFORMATION:

The following insecticides were used under emergency exemptions in this region:
1982 - Acephate for stinkbugs in Texas
1993 - Lambda-cyhalothrin for armyworm in Texas
1991 and 1992 - Permethrin for armyworm in Texas

SOURCES:

[1] Proprietary EPA Market Share Information
[2] 1997 Louisiana Rice Insect Control
[3] Texas Agricultural Extension Service, 1997 Rice Production Guidelines
[4] The Biologic and Economic Assessment of Pest Management in Rice, USDA-National Agricultural Pesticide Impact Assessment Program.
[5] Arthropod Management Tests Vol. 22.
[6] Personal communication with Dr. John Saichuk, Rice Specialist, LSU Agriculutural Center, Cooperative Extension Service
[7] Mississippi Rice Grower's Guide
[8] Arkansas Rice Production Handbook

Date: September 9, 1998